

# Mechanisms involved in agonist-induced hyperaggreability of platelets from normal pregnancy.

林建煌,許準榕

Sheu JR;Hsiao G;Lin WY;Chen TF;Chien YY;Lin CH;Tzeng CR

## Abstract

There is substantial evidence of increased platelet reactivity in vivo and in vitro during pregnancy. Platelet activation occurs in pregnancy with a risk of the development of preeclampsia. In this study, platelet behavior was studied during 28-40 weeks of gestation in a group of women who remained normotensive and a group of nonpregnant female controls. Platelet aggregation and ATP release stimulated by agonists (i.e. collagen and adenosine 5'-diphosphate) were markedly enhanced in washed platelets from pregnant subjects. Furthermore, the collagen-evoked increase in intracellular  $Ca^{2+}$  ( $[Ca^{2+}]_i$ ) mobilization in fura-2-AM-loaded platelets was also enhanced in pregnant subjects. Moreover, the binding activity of fluorescein isothiocyanate-triflavin toward the platelet glycoprotein IIb/IIIa complex did not significantly differ between the nonpregnant and pregnant groups. In addition, the amount of thromboxane A<sub>2</sub> (TxA<sub>2</sub>) formation from pregnant subjects was significantly greater than that from nonpregnant subjects in both resting and collagen-activated platelets. On the other hand, prostaglandin E<sub>2</sub> formation in the presence of imidazole in either resting or arachidonic acid (100  $\mu$ M)-treated platelets did not significantly differ between these two groups. The levels of cyclic AMP formation in both resting and prostaglandin E<sub>1</sub> (10  $\mu$ M)-treated platelets from pregnant subjects were significantly lower than those in nonpregnant subjects. Nitric oxide production was measured by a chemiluminescence detection method in this study. The extent of nitrate production in either resting or collagen-stimulated platelets from pregnant subjects did not significantly differ from that of platelets from the nonpregnant group. We conclude that the agonist-induced hyperaggregability of platelets from normal pregnancy may be due, at least partly, to an increase in TxA<sub>2</sub> formation and a lowering of the level of cyclic AMP formation, which leads to increased  $[Ca^{2+}]_i$  mobilization and finally to enhanced platelet aggregation and ATP release.